Ventolin HFA Product Profile Summary

NAEPP Guidelines for the Management of Asthma

Inhaled short-acting beta$_2$-agonists, such as albuterol, are the drug of choice for treating acute asthma symptoms or exacerbations and for preventing episodes of exercise-induced bronchospasm.(1) Regularly scheduled, daily use of short-acting beta$_2$-agonists for the treatment of asthma is not recommended.

Monitoring Contents of Metered-Dose Inhaler

In a random telephone interview of 500 families with asthma in the U.S, 25% (87/342) of respondents receiving bronchodilator therapy found their metered-dose inhaler empty during an asthma exacerbation.(2) Of those, 82% considered their metered-dose inhaler empty when the canister was completely exhausted. Results from the survey demonstrated a lack of reliable means for monitoring the contents of metered-dose inhalers. As a result, patients may be at risk for inadequately managing their asthma or an asthma exacerbation. Additionally, patients may be refilling their inhaler more frequently than required. Manually tracking the number of actuations is often impractical when a rescue inhaler is used on an irregular basis. Metered-dose inhalers which include a dose counting feature may help eliminate uncertainty about the number of doses remaining in the inhaler.

Benefits of *Ventolin HFA*

• *Ventolin HFA* contains albuterol, a potent short-acting beta$_2$-agonist bronchodilator, and a hydrofluoroalkane (HFA) propellant.

• *Ventolin HFA* is supplied with a dose counter physically attached to the canister to show the number of doses remaining in the canister. The dose counter begins at 204, which allows for 4 priming sprays, and counts down to 000.

• *Ventolin HFA* does not contain chlorofluorocarbons (CFCs).

• *Ventolin HFA* has a fast onset of action. One study in adults and adolescents found the mean time to onset (defined as a 15% increase in forced expiratory volume in one second [FEV_1] over pretreatment values) was 5.4 minutes, the mean time to peak effect was 56 minutes, and the mean duration of effect was 4 hours. (3)

• *Ventolin HFA* is approved for use in children $\geq$ 4 years of age. (3)

Efficacy

• A 12-week, randomized, double-blind study compared *Ventolin HFA*, *Ventolin* CFC (no longer available), and placebo in approximately 300 adults and adolescents with mild to moderate asthma. *Ventolin HFA* produced a significantly greater improvement in FEV_1 over pretreatment values than placebo, but was similar in efficacy to *Ventolin* CFC.(3)

• Another 12-week, randomized, double-blind study evaluated the safety and efficacy of switching from *Ventolin* CFC to *Ventolin HFA* in approximately 300 adults and adolescents with mild to moderate asthma. A third of the patients switched from *Ventolin* CFC to *Ventolin HFA*, a third switched to placebo and the rest continued receiving *Ventolin* CFC. Serial FEV_1 measurements found that *Ventolin HFA* resulted in significant improvements in lung function compared to placebo. Furthermore, switching from *Ventolin* CFC to *Ventolin HFA* did not result in any clinically significant changes in efficacy. (3) (4)

• A 2-week, randomized, double-blind study compared *Ventolin HFA*, *Ventolin* CFC and placebo in 135 pediatric patients (4 – 11 years old) with mild to moderate asthma. Serial pulmonary function tests found that *Ventolin HFA* resulted in significantly greater improvements in pulmonary function compared to placebo, but there was no significant difference between *Ventolin HFA* and *Ventolin* CFC.(3) (5)

Safety

• Adverse events in adults and adolescents (n=202) treated with *Ventolin HFA* for 12 weeks with an incidence $\geq$3% and occurring more frequently than in the placebo group included: throat irritation 10%, upper respiratory inflammation 5%, viral respiratory infections 7%, cough 5%, and musculoskeletal pain 5%. (3)

• *Ventolin HFA* can produce paradoxical bronchospasm, which may be life threatening. Paradoxical bronchospasm, when associated with inhaled formulations, frequently occurs with the first use of a new canister. (3)

• *Ventolin HFA* can produce clinically significant cardiovascular effects in some patients as measured by pulse rate, blood pressure, and/or symptoms. Such effects are uncommon after administration of *Ventolin HFA* at recommended doses, but if they occur the drug may need to be discontinued. Beta-agonists have also been reported to produce electrocardiogram changes, such as flattening of the T wave, prolongation of the QTc interval, and ST segment depression. Therefore, *Ventolin HFA* should be used with caution in patients with cardiovascular disorders, especially coronary insufficiency, cardiac arrhythmias, and hypertension.(3)

• If the patient needs more doses of *Ventolin HFA* than usual, this may be a marker of asthma destabilization. This requires reevaluation of the patient and treatment regimen giving special consideration to the possible need for anti-inflammatory treatment, e.g., corticosteroids. (3)

• Do not exceed the recommended dose of *Ventolin HFA*. Fatalities have been reported in association with excessive use of inhaled sympathomimetic drugs in patients with asthma. (3)

• *Ventolin HFA* alone may not be adequate to control asthma in many patients. Early consideration should be given to adding anti-inflammatory agents, e.g., corticosteroids, to the therapeutic regimen. (3)

• Immediate hypersensitivity reactions may occur after administration of *Ventolin HFA* as demonstrated by cases of urticaria, angioedema, rash, bronchospasm, anaphylaxis, and oropharyngeal edema. (3)

Indications

Ventolin HFA is indicated for the treatment or prevention of bronchospasm in adults and children 4 years of age and older with reversible obstructive airway disease.(3) *Ventolin HFA* is also indicated for the prevention of exercise-induced bronchospasm in patients 4 years of age and older.

Dosing

Asthma in Adults and Children ($\geq$ 4 years old)

For treatment of acute episodes of bronchospasm or prevention of asthmatic symptoms, the usual dosage for adults and children 4 years of age and older is 2 inhalations (180 mcg albuterol base) repeated every 4 to 6 hours.(3) In some patients, 1 inhalation every 4 hours may be sufficient.

Prevention of Exercise-Induced Bronchospasm in Adults and Children ($\geq$ 4 years old)

The usual dosage is 2 inhalations (180 mcg albuterol base) 15 to 30 minutes before exercise.(3)

REFERENCE(S)

1. Guidelines for the Diagnosis and Management of Asthma (EPR-3) 2007. NIH, NHLBI. August 2007. NIH publication no. 08-4051. *

2. Sander N, Fusco-Walker SJ, Harder JM, et al . Dose counting and the use of pressurized metered-dose inhalers: running on empty. Ann Allergy Asthma Immunol 2006;97:34-38.*
3. Prescribing Information. Ventolin® HFA. *
4. Lumry W, Noveck R, Weinstein S, et al. Switching from *Ventolin* CFC to *Ventolin* HFA is well tolerated and effective in patients with asthma. Ann Allergy Asthma Immunol 2001;86(3):297-303.*
5. Shapiro G, Bronsky E, Murray A, et al. Clinical comparability of *Ventolin* formulated with hydrofluoroalkane or conventional chlorofluorocarbon propellants in children with asthma. Arch Ped Adolescent Med 2000;154(12):1219-1225.*